

have been cancelled. New claims 29 to 32 have also been added to ensure all aspects of the invention are protected.

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Respectfully submitted:

by:  on 2/27/2003

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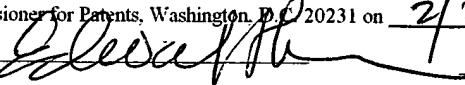
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Marked-Up Version f the Claims

1. (amended) A process for making a multilayer interference filter assembly [having substantially reduced net stress, the process] comprising the steps of:
 - a) providing a first substrate,
 - b) depositing a removable multilayer interference filter [having total thickness of greater than 8 microns] over said first substrate,
 - c) removing the multilayer interference filter from the first substrate to form a free standing filter;
 - d) attaching the free standing filter to a second substrate having a coefficient of thermal expansion enabling the second substrate to apply a stress to the free standing filter for at least partially compensating for a shift in center wavelength over an operating temperature range.
2. (amended) The process of claim 1, wherein the [multilayer interference filter has a thickness of greater than 20 microns] second substrate is an annular frame, whereby the free standing filter spans an opening in the annular frame.
3. (amended) The process of claim 1, wherein the [multilayer interference filter has a thickness of greater than 40 microns] coefficient of thermal expansion of the second substrate is higher than that of the free standing filter, whereby the second substrate stretches the free standing filter at temperatures at a high end of the operating temperature range.
4. (amended) The process of claim 1, wherein a release means is provided before depositing said removable [coating] multi-layer interference filter.
5. (amended) The process of claim 4, wherein the release means is a release layer [is] selected from the group consisting of: organic photoresist materials soluble in organic solvents water-soluble salts, water-soluble polymers, metals, and metal compounds.

7. (amended) The process of claim 4, wherein the release means is a release layer, said release layer being deposited over the first substrate in a discrete pattern whereby each free standing multilayer interference filter is released from the first substrate with lateral dimensions corresponding to the discrete pattern.

9. (amended) The process of claim 1, further comprising the step of attaching the free standing [multilayer interference] filter to a [second] third substrate , wherein the third substrate has a coefficient of thermal expansion enabling the third substrate to apply a stress to the free standing filter for at least partially compensating for a shift in center wavelength over an operating temperature range.

10. (amended) The process of claim 9, wherein the [multilayer interference filter is juxtaposed to overlay an aperture in the second substrate] second and third substrates are annular, whereby the free-standing filter spans openings in the second and third substrates.

Cancel Claim 11

12. (amended) The process of claim [11] 1, wherein [the method of depositing the removable interference filter comprises the steps of] step b includes:

- [a] i) introducing the first substrate into a vacuum deposition chamber,
- [b] ii) reducing the pressure in said vacuum deposition chamber,
- [c] iii) providing a release treatment to said first substrate,
- [d] iv) depositing a protective layer onto said release treated substrate,
- [e] v) restoring the pressure in the vacuum deposition chamber,
- [f] vi) reintroducing the first substrate to the vacuum deposition chamber,
- [g] vii) depositing a multilayer interference filter having an initial net stress over the protective layer.

13. (amended) The process of claim 2, [11] wherein the annular frame comprises a metal, and the coefficient of thermal expansion of the annular frame is greater than that of the free standing filter [initial net stress is greater than 100 Mpa.].

14. (amended) The process of claim 13, [11] wherein the annular frame comprises stainless steel having a coefficient of thermal expansion of between $103 \times 10^{-7}/^{\circ}\text{K}$ and $179 \times 10^{-7}/^{\circ}\text{K}$ [initial net stress is reduced to less than 50 Mpa.].

15. (amended) The process of claim 10, [13] wherein the second and third substrates comprise metal, each having coefficients of thermal expansion greater than that of the free standing filter [initial net stress is reduced to less than 50 Mpa].

Cancel Claims 16 to 21

22. (amended) An optical filter assembly comprising:

a first frame member having a first planar surface that substantially surrounds a central opening therein, the first frame member having a first coefficient of thermal expansion, and

a multilayer interference filter free of any substrate having a first surface attached to the planar surface of said first frame member to define an unobstructed optical aperture through said multilayer interference filter, the multi-layer interference filter having a second coefficient of thermal expansion larger than the first coefficient of thermal expansion.

whereby the frame member applies a stress to the multiplayer interference filter during changes in temperature, thereby reducing a shift in the center wavelength transmitted by the multi-layer interference filter.

23. (amended) An optical filter assembly according to claim 22, further comprising a second frame member with a central opening therethrough attached to [the] a second surface of said multilayer interference filter, wherein the optical aperture through said multilayer interference filter is substantially unobstructed.

24. (amended) An optical filter assembly according to claim [22 further comprising a] 23, wherein the second frame member [attached to] and the first frame members [wherein the optical aperture through said multilayer interference filter is substantially unobstructed] are annular.

25. (amended) An optical filter assembly according to claim [22] 23, wherein the first and second frame members [is formed] are comprised of [a] stainless steel material [having a larger thermal expansion coefficient than at least one of the materials which comprise said multilayer interference filter].

26. (amended) An optical filter assembly according to claim [22] 23, wherein the first and second frame members are [is]formed from a material having a coefficient of thermal expansion of [greater than 20] between 103 x 10⁻⁷/°K and 179 x 10⁻⁷/°K.